

## Dual Shield II 71 ULTRA

Dual Shield II 71 Ultra is an all-position flux cored wire that displays exceptional impact properties when used with CO<sub>2</sub>. The improved properties qualify this wire to the Navy's "HY" classification. The "Ultra" series produces smoother arc characteristics and lower welding fumes. Dual Shield II 71 Ultra was developed to join low and medium carbon steel. The Military classification allows Dual Shield II 71 Ultra to be used for attaching steels of less than 80 ksi (552 MPa) yield to HY-80 and HY-100. Commercial applications include construction, shipbuilding, railcar, and heavy equipment industries. Weld metal analysis is similar to an E7018 low hydrogen electrode.

<b>Classifications</b>	ASME SFA 5.36 ASME SFA 5.20 AWS A5.36: E71T1-C1P4-CS2-H8 AWS A5.36: E71T1-C1A4-CS2-H8 AWS A5.20: E71T-1CJ-H8/T-9CJ-H8/12CJ-H8
<b>Approvals</b>	ABS CWB CSA W48 E491T-12J-H8 DNV-GL LR QPL-24403/1 MIL-71T-1C QPL-24403/1 MIL-71T-1-HYC
<b>Industry</b>	Bridge Construction Civil Construction Industrial and General Fabrication Mobile Equipment Railcars Ship/Barge Building

Approvals are based on factory location. Please contact ESAB for more information.

### Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
As Welded	495 MPa (71 ksi)	540 MPa (79 ksi)	77 %	28 %

### Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
<b>100% CO<sub>2</sub></b>		
As Welded	-40 °C (-40 °F)	53 J (72 ft-lb)
<b>100% CO<sub>2</sub></b>		
Stress Relieved	-40 °C (-40 °F)	84 J (62 ft-lb)
As Welded	-18 °C (0 °F)	154 J (114 ft-lb)
As Welded	-29 °C (-20 °F)	132 J (98 ft-lb)

### Typical Wire Composition %

C	Mn	Si	S	P
0.03	1.40	0.40	0.010	0.012

### Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	Efficiency %
<b>100% CO<sub>2</sub></b>					
1.2 mm (.045 in.)	142 A	24.5 V	508 cm/min (200 in./min)	1.66 kg/h (3.66 lb/h)	80.2 %
1.2 mm (.045 in.)	193 A	26 V	762 cm/min (300 in./min)	2.55 kg/h (5.63 lb/h)	82.3 %
1.2 mm (.045 in.)	230 A	27.5 V	1016 cm/min (400 in./min)	3.41 kg/h (7.52 lb/h)	83.0 %
1.2 mm (.045 in.)	275 A	29 V	1270 cm/min (500 in./min)	4.33 kg/h (9.55 lb/h)	83.0 %
1.4 mm (.052 in.)	155 A	23.5 V	381 cm/min (150 in./min)	1.79 kg/h (3.94 lb/h)	81.2 %
1.4 mm (.052 in.)	185 A	24.5 V	508 cm/min (200 in./min)	2.29 kg/h (5.06 lb/h)	80.3 %
1.4 mm (.052 in.)	245 A	26 V	762 cm/min (300 in./min)	3.65 kg/h (8.05 lb/h)	83.6 %
1.4 mm (.052 in.)	300 A	27.5 V	1016 cm/min (400 in./min)	4.86 kg/h (10.71 lb/h)	84.3 %
1.4 mm (.052 in.)	345 A	29 V	1270 cm/min (500 in./min)	6.24 kg/h (13.77 lb/h)	86.7 %

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Deposition Data					
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	Efficiency %
1.4 mm (.052 in.)	405 A	30.5 V	1524 cm/min (600 in./min)	7.54 kg/h (16.62 lb/h)	86.9 %
0.9 mm (.035 in.)	110 A	24.6 V	635 cm/min (250 in./min)	1.13 kg/h (2.48 lb/h)	72.9 %
0.9 mm (.035 in.)	142 A	26 V	1016 cm/min (400 in./min)	2.05 kg/h (4.53 lb/h)	83.5 %
0.9 mm (.035 in.)	158 A	26.5 V	1206.5 cm/min (475 in./min)	2.49 kg/h (5.50 lb/h)	84.2 %
0.9 mm (.035 in.)	177 A	27.5 V	1397 cm/min (550 in./min)	2.82 kg/h (6.23 lb/h)	83.4 %
0.9 mm (.035 in.)	215 A	30 V	1905 cm/min (750 in./min)	3.83 kg/h (8.45 lb/h)	83.5 %
1.6 mm (1/16 in.)	205 A	24 V	381 cm/min (150 in./min)	2.41 kg/h (5.31 lb/h)	81.0 %
1.6 mm (1/16 in.)	290 A	25.5 V	635 cm/min (250 in./min)	3.98 kg/h (8.77 lb/h)	83.2 %
1.6 mm (1/16 in.)	340 A	26 V	762 cm/min (300 in./min)	4.77 kg/h (10.53 lb/h)	83.7 %
1.6 mm (1/16 in.)	375 A	27 V	889 cm/min (350 in./min)	5.60 kg/h (12.35 lb/h)	84.8 %

Welding Parameters				
Wire Diameter	Current	Voltage	TTW Dist.	Wire Feed Speed
<b>100% CO<sub>2</sub></b>				
1.2 mm (.045 in.)	130-200 A	23-26 V	9.5-12.7 mm (3/8-1/2 in.)	381-660 cm/min (150-260 in./min)
1.2 mm (.045 in.)	200-225 A	25-27 V	12.7-19 mm (1/2-3/4 in.)	660-965 cm/min (260-380 in./min)
1.2 mm (.045 in.)	225-265 A	26-30 V	19-25.4 mm (3/4-1 in.)	965-1321 cm/min (380-520 in./min)
1.4 mm (.052 in.)	125-235 A	23-26 V	12.7-16 mm (1/2-5/8 in.)	279-584 cm/min (110-230 in./min)
1.4 mm (.052 in.)	235-290 A	25-29 V	16-19 mm (5/8-3/4 in.)	584-864 cm/min (230-340 in./min)
1.4 mm (.052 in.)	290-350 A	29-31 V	19-25.4 mm (3/4-1 in.)	864-1194 cm/min (340-470 in./min)
1.6 mm (1/16 in.)	165-270 A	25-28 V	16-19 mm (5/8-3/4 in.)	279-508 cm/min (110-200 in./min)
1.6 mm (1/16 in.)	270-345 A	27-30 V	19-25.4 mm (3/4-1 in.)	508-762 cm/min (200-300 in./min)
1.6 mm (1/16 in.)	345-415 A	28-32 V	25.4-31.75 mm (1-1.25 in.)	762-1067 cm/min (300-420 in./min)